What is claimed is:

1. An apparatus having X-ray generating means for generating an X-ray by allowing an electron beam from an electron source to impinge on a target for X-ray generation, for inspecting an object to be inspected by utilizing said X-ray,

said X-ray microscopic inspection apparatus comprising a magnetic superposition lens having a magnetic field generating portion disposed in the vicinity of an electron generating portion of an electron gun, as a component element of said X-ray generating means.

2. An X-ray microscopic inspection apparatus having X-ray generating means for generating an X-ray by allowing an electron beam from an electron source to impinge on a target for X-ray generation, for inspecting an object to be inspected by utilizing said X-ray,

said X-ray microscopic inspection apparatus comprising a liquid metal electron source using liquid metal as said electron source, as a component element of said X-ray generating means.

3. An X-ray microscopic inspection apparatus having X-ray generating means for generating an X-ray by allowing an electron beam from an electron source to impinge on a target

for X-ray generation, for inspecting an object to be inspected by utilizing said X-ray,

said X-ray microscopic inspection apparatus comprising a thermal field emission electron source as said electron source, as a component element of said X-ray generating means.

4. An X-ray microscopic inspection apparatus having X-ray generating means for generating an X-ray by allowing an electron beam from an electron source to impinge on a target for X-ray generation, for inspecting an object to be inspected by utilizing said X-ray,

said X-ray microscopic inspection apparatus comprising a target with a heat sink using thin CVD diamond plate as the heat sink as said target for X-ray generation, as a component element of said X-ray generating means.

5. An X-ray microscopic inspection apparatus according to Claim 1, further comprising at least one component element of an electron source using liquid metal or a thermal field emission electron source as said electron source, and a target with a heat sink using thin CVD diamond plate as the heat sink as said target for X-ray generation, as a component element of said X-ray generating means.